What is claimed is:

1. A thermally conductive adhesive composition devoid of fugitive solvents comprising:

a) a powder of a high melting point metal or metal alloy;

b) a powder of a low melting point metal or metal alloy; and

c) a thermally curable adhesive flux composition that is comprised of:

(i) a polymerizable fluxing agent represented by the formula RCOOH wherein R comprises a moiety having one or more polymerizable carbon-carbon double bonds; and

(ii) an inerting agent to react with the polymerizable fluxing agent at elevated temperature, rendering the polymerizable fluxing agent inert.

2. The thermally conductive adhesive composition according to claim 1 wherein the high melting point metal or metal alloy comprises a material selected from the group consisting of copper, silver, aluminum, nickel, gold, platinum, palladium, beryllium, rhodium, nickel, cobalt, iron, molybdenum and alloys and mixtures thereof.

3. The thermally conductive adhesive composition according to claim 1 wherein the low melting point metal or metal alloy comprises a material selected from the group consisting of Sn, Bi, Pb, Cd, Zn, In, Te, Tl, Sb, Se and alloys and mixtures thereof.

4. The thermally conductive adhesive composition according to claim 1 wherein the polymerizable fluxing agent comprises a material selected from the group consisting of 2-(methacryloyloxy)ethyl succinate, mono-2-(methacryloyloxy)ethyl maleate, mono-2-(methacryloyloxy)ethyl phthalate, mono-2-(acryloyloxy)ethyl succinate and mixtures thereof.

5. The thermally conductive adhesive composition according to claim 1 wherein the inerting agent comprises a material selected from the group consisting of bisphenol A diglycidyl ether, bisphenol F diglycidyl ether, 1,4-cyclohexanedimethanol diglycidyl ether, 3,4-epoxycyclohexylmethyl 3,4-epoxycyclohexanecarboxylate, N,N-diglycidyl-4-glycidyl-oxyaniline, glycidyl phenyl ether, glycidyl 4-methoxyphenyl ether, epoxy propyl benzene and mixtures thereof.

6. The thermally conductive adhesive composition according to claim 1 further comprising one or more components selected from the groups consisting of :

(i) a diluent that is capable of polymerizing with the fluxing agent's polymerizable carbon-carbon double bonds;

(ii) a source of free radical initiators;

(iii) a curable resin;

(iv) a crosslinking agent that improves crosslinking of the curable resins or fluxing agents; and

(v) an accelerator to increase the rate of reaction.

7. The thermally conductive adhesive composition according to claim 6 wherein said diluent comprises a material selected from the group consisting of 1,6-hexanediol diacrylate, 1,6-hexanediol dimethacrylate, tris[2-(acryloxy)ethyl]isocyanurate, trimethylolpropane trimethacrylate, ethoxylated bisphenol diacrylate and mixtures thereof

8. The thermally conductive adhesive composition according to claim 6 wherein said sourse of free radical initiators comprises a material selected from the group consisting of benzoyl peroxide, cumyl peroxide, 1,1'-azobis(cyclohexanecarbonitrile), 2,2'-azobisisobutyronitrile, and mixtures thereof.

9. The thermally conductive adhesive composition according to claim 6 wherein said curable resin comprises a material selected from the group consisting of epoxies, phenolics, phenolic novalacs, cresolic novalacs, polyurethanes, polyimides, bismaleimides, maleimides, cyanate esters, polyvinyl alcohols, polyesters, and polyureas.

10. The thermally conductive adhesive composition according to claim 6 wherein said crosslinking agent comprises a material selected from the group consisting of tetrahydrophthalic anhydride, hexahydro phthalic anhydride, nadic methyl anhydride, 4-methylhexahydrophthalic anhydride, methyltetrahydrophthalic anhydride and mixtures thereof.

11. The thermally conductive adhesive composition according to claim 6 wherein said accelerator comprises a material selected from the group consisting of imidazole and its

derivatives, dicyandiamide, biguanide derivatives, tertiary amines, transition metal acetylacetonates, and mixtures thereof.

12. An electronic assembly comprising an electronic device and a substrate bonded by a sintered thermally conductive adhesive, said adhesive devoid of fugitive solvents and comprising:

a) a powder of a high melting point metal or metal alloy;

b) a powder of a low melting point metal or metal alloy; and

c) a thermally curable adhesive flux composition that is comprised of:

(i) a polymerizable fluxing agent;

(ii) an inerting agent to react with the fluxing agent at elevated temperature, rendering the polymerizable fluxing agent inert.

13. The electronic assembly according to claim 12 wherein the thermally curable adhesive flux composition further comprises a polymerizable fluxing agent represented by the formula RCOOH wherein R comprises a moiety having one or more polymerizable carbon-carbon double bonds.

14. The electronic assembly composition according to claim 12 wherein the polymizerable fluxing agent comprises a material selected from the group consisting of 2-(methacryloyloxy)ethyl succinate, mono-2-(methacryloyloxy)ethyl maleate, mono-2-(methacryloyloxy)ethyl phthalate, mono-2-(acryloyloxy)ethyl succinate and mixtures thereof.

15. The electronic assembly composition according to claim 12 wherein the high melting point metal or metal alloy comprises a material selected from the group consisting of copper, silver, aluminum, nickel, gold, platinum, palladium, beryllium, rhodium, nickel, cobalt, iron, molybdenum and alloys and mixtures thereof.

16. The electronic assembly according to claim 12 wherein the low melting point metal or metal alloy comprises a material selected from the group consisting of Sn, Bi, Pb, Cd, Zn, In, Te, Tl, Sb, Se and alloys and mixtures thereof.

17. The electronic assembly according to claim 12 wherein the inerting agent comprises a material selected from the group consisting of bisphenol A diglycidyl ether, bisphenol F

diglycidyl ether, 1,4-cyclohexanedimethanol diglycidyl ether, 3,4-epoxycyclohexylmethyl 3,4-epoxycyclohexanecarboxylate, N,N-diglycidyl-4-glycidyl-oxyaniline, glycidyl phenyl ether, glycidyl 4-methoxyphenyl ether, epoxy propyl benzene and mixtures thereof.

18. A method of attaching an electronic device to a substrate comprising the steps of:

(a) obtaining an electronic device with at least one bondable surface;

(b) obtaining a substrate with a corresponding bondable surface;

(c) dispensing a thermally conductive adhesive on one or both of the bondable surfaces of the substrate or electronic device, said adhesive devoid of fugitive solvents and comprising

(i) a powder of a high melting point metal or metal alloy;

(ii) a powder of a low melting point metal or metal alloy; and

(iii) a thermally curable adhesive flux composition that is comprised of:

(A) a polymerizable fluxing agent;

(B) an inerting agent to react with the fluxing agent at elevated temperature, rendering the polymerizable fluxing agent inert.

(d) placing the electronic device on the substrate so the bondable surface of the electronic device is mated with the bonding surface of the substrate, thereby forming a combined assembly;

(e) heating the combined assembly to an elevated temperature, thereby causing the powder of the low melting point metal or metal alloy to liquefy;

(f) allowing the liquefied low melting point metal or metal alloy to sinter with the high melting point metal or metal alloy and the inerting agent to react with the fluxing agent, rendering the fluxing agent inert;

(g) polymerizing the fluxing agent; and

(h) allowing the assembly to cool.

19. The method according to claim 18 wherein the thermally curable adhesive flux composition further comprises a polymerizable fluxing agent represented by the formula RCOOH wherein R comprises a moiety having one or more polymerizable carbon-carbon double bonds.

20. The method according to claim 18 wherein the polymizerable fluxing agent comprises a material selected from the group consisting of 2-(methacryloyloxy)ethyl succinate, mono-2-(methacryloyloxy)ethyl maleate, mono-2-(methacryloyloxy)ethyl phthalate, mono-2-(acryloyloxy)ethyl succinate and mixtures thereof.

21. The method according to claim 18 wherein the high melting point metal or metal alloy comprises a material selected from the group consisting of copper, silver, aluminum, nickel, gold, platinum, palladium, beryllium, rhodium, nickel, cobalt, iron, molybdenum and alloys and mixtures thereof.

22. The method according to claim 18 wherein the low melting point metal or metal alloy comprises a material selected from the group consisting of Sn, Bi, Pb, Cd, Zn, In, Te, Tl, Sb, Se and alloys and mixtures thereof.

23. The method according to claim 18 wherein the inerting agent comprises a material selected from the group consisting of bisphenol A diglycidyl ether, bisphenol F diglycidyl ether, 1,4-cyclohexanedimethanol diglycidyl ether, 3,4-epoxycyclohexylmethyl 3,4-epoxycyclohexanecarboxylate, N,N-diglycidyl-4-glycidyl-oxyaniline, glycidyl phenyl ether, glycidyl 4-methoxyphenyl ether, epoxy propyl benzene and mixtures thereof.